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# **HEALTH CARE INEQUITY IN SOUTH AFRICA AND THE PUBLIC/PRIVATE MIX**

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## **ABSTRACT**

This working paper presents information and analyses of health care inequity in South Africa, with specific reference to what health economists term the public-private mix in health care. The paper identifies the apartheid legacy of disadvantage in terms of health status and inequitable access to health care, and outlines health policy initiatives since 1994. It draws together household survey data and other evidence to highlight three aspects of the South African health system since that date:

1. increased use of the private sector (all forms of provider) across population groups;
2. stagnation of government funding for publicly-provided health care, which has implications for quality of care and household utilisation preferences;
3. cost escalation in, growth of, and attraction of health personnel to, the private sector, and the implications this has for the sustainability of the overall health system, given household utilisation preferences.

This working paper largely draws upon existing sources and material, but also includes a new analysis of health care utilisation data. The paper provides background material for further assessment of the potential for public-private interactions to support greater cross-subsidy between population groups.

# 1. THE CONTEXT OF HEALTH AND HEALTH CARE IN SOUTH AFRICA

## 1.1 The apartheid legacy of disadvantage

A range of household surveys provide data on the extent and nature of socio-economic disadvantage in South Africa. These include the 1992/93 Project for Statistics on Living Standards and Development (LSDS), the annual October Household Surveys (OHS) conducted by Statistics South Africa, a 1994/5 survey of health inequalities (Hirschowitz and Orkin 1995) the South African Participatory Poverty Assessment (SA-PPA 1997), and the 1996 population census. Analysis of these surveys (see, for example, Reconstruction and Development Programme 1995; May *et al.* 1995; May 1998) suggests that the most crucial indicators of disadvantage include: race (African and to a lesser extent coloured<sup>1</sup>); housing; access to energy sources; water and sanitation; educational status; employment status; food access and nutritional status; geographic location (especially rural residence); fragmentation of the family, especially labour migrancy; gender (especially single mothers and female heads of households) and age (young children and the elderly who have no wider family support).

As the human development disparities of South Africa are largely attributable to the racially discriminatory economic and social policies of apartheid (Gilson and McIntyre 2002) they can clearly be regarded as unacceptable inequalities. As noted in the 1998 Poverty and Inequality report, “many of the distortions and dynamics introduced by apartheid continue to reproduce poverty and perpetuate inequality. The correct identification of these and the introduction of remedial policies have been identified as *priorities by both government and civil society*” (May 1998: 2 - authors’ emphasis). If government resources are to be allocated in line with these priorities, groups who fare the worst in these human development indicators should be awarded priority in the allocation of these resources.

The disparities in socio-economic status have also contributed to inequalities in health status in South Africa. Gilson and McIntyre (2002) found that there are significant differences in the incidence of ill-health between different race groups and geographic areas as well as between groups of different socio-economic status. Using 1992/93 data, the infant mortality rate (IMR) of the African population was found to be nearly six times greater than that of the white population. In addition, the IMR varied by a factor of nearly 5 between provinces and by nearly 3 between the highest and lowest household income quintiles. The authors also found that income is a mediating factor in the relationship between race and health status. For the African and coloured populations, there is a clear trend of declining IMR with rising income.

## 1.2 The health system legacy of apartheid

Health policy in the apartheid era, like all government action, served the dominant objective of maintaining economic and political power for the white population group. It was shaped to maintain a difference in the quality of life enjoyed by different population groups and so promote political support for the National Party (Price 1986). As a result, the health system inherited by the new government in 1994 can be characterised as:

- centralised and undemocratic (Health Systems Trust 1996);

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<sup>1</sup> The use of the terms ‘African’, ‘white’, ‘coloured’ and ‘Indian’ reflects a statutory stratification of the South African population in terms of the former Population Registration Act. The use of these terms does not imply the legitimacy of this racist terminology.

- highly fragmented in structure: health service delivery was divided between a range of health authorities (e.g. national, provincial, former 'homeland'<sup>2</sup>, and local government structures), and curative and preventive primary care services were provided in separate facilities and administered by different health authorities (de Beer 1988; van Rensburg *et al.* 1992);
- inefficiently and inequitably biased towards curative and higher level services (only 11 percent of total public sector health care expenditure was devoted to non-hospital primary care services: McIntyre *et al.* 1995);
- inequitably biased towards historically 'white' areas as certain geographic areas (namely rural areas, particularly former 'homeland' areas, 'township' areas, and informal settlements) were systematically underfunded as a result of apartheid policies;
- inequitably biased towards the wealthy minority who use the private sector, estimated to be around 23 percent of the population (Valentine and McIntyre 1994), and who, for example, had access to the nearly 61 percent of total health care expenditure attributable to this sector in 1992/93 (McIntyre *et al.* 1995)<sup>3</sup>.

As a result South Africa has a relatively well developed health sector with health care expenditure accounting for approximately 8.5% of Gross Domestic Product in 1992/93 (McIntyre *et al.* 1995). However, it has poor health status indicators compared to other middle-income countries, many of which devote considerably fewer resources to health care. Table 1 indicates that while South Africa has better health status indicators than some of its neighbours, its health status is worse than Botswana and Zimbabwe. The differences in health status between South Africa and Zimbabwe are particularly striking, given that Zimbabwe has a GNP per capita which is four times lower than that in South Africa. At the same time, although the level of economic development in South Africa is comparable to some Latin American countries, its health status indicators, and its Human Development Index (HDI), are considerably worse than those middle-income countries considered in Table 1.

These apparent anomalies are largely attributable to the mal-distribution of health care resources between the public and private sectors, on a geographic basis and between levels of care.

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<sup>2</sup> In terms of the 1913 'Natives Land Act', Africans were confined to living in ten 'homelands', which were highly fragmented geographic areas scattered throughout South Africa, and established along 'tribal' lines. These 'homelands' comprised less than 14 percent of the total surface area of South Africa. These 'homelands' have recently been reincorporated within the nine newly formed provinces.

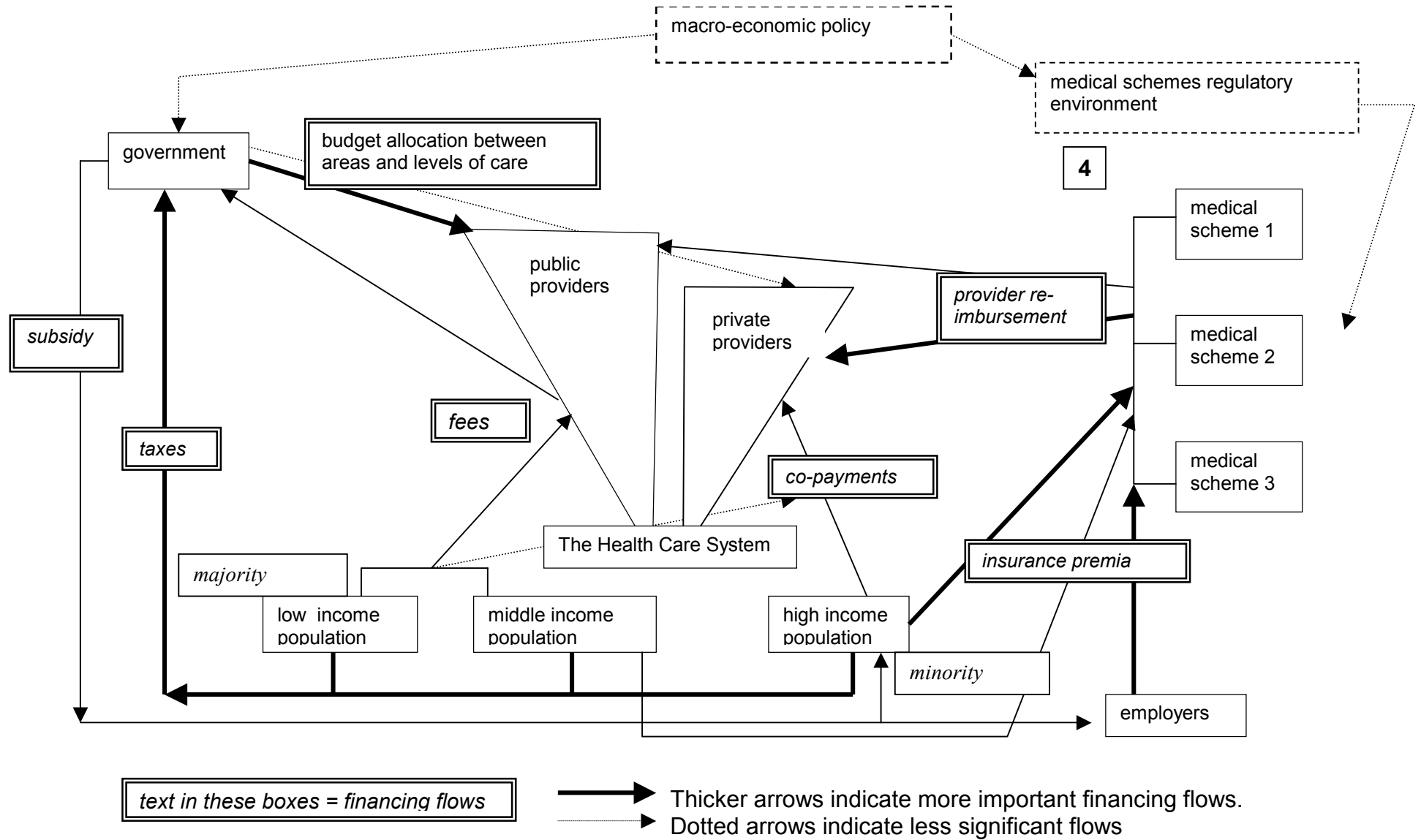
<sup>3</sup> In addition, the majority of the most highly trained health personnel work in the private sector: 62 percent of general doctors, 66 percent of specialists, 93 percent of dentists, 89 percent of pharmacists, and 60 percent of supplementary health professionals (Rispel and Behr 1992).

**Table 1: International comparison of health status and other indicators (1990/1991) (From: McIntyre and Gilson 2002)**

Country	GNP per capita (US\$)	Human Development Index (HDI) (1993)	Infant mortality rate (IMR) per 1,000 live births	Life expectancy at birth (Years)	Incidence of tuberculosis (per 100,000 population)	% of children (12-23 months) with wasting	% of children (24-59 months) with stunting
<b>South Africa</b>	<b>2,560</b>	<b>0.649</b>	<b>54</b>	<b>62</b>	<b>250</b>	<b>10</b>	<b>53</b>
<b>Southern African countries</b>							
Mozambique	80	0.261	149	43	189	--	--
Zambia	360	0.411	106	47	345	10	59
Zimbabwe	650	0.534	48	62	207	2	31
Botswana	2,530	0.741	36	68	--	6	37
<b>Selected middle-income countries</b>							
Malaysia	2,520	0.826	15	71	67	6	32
Venezuela	2,730	0.859	34	72	44	4	7
Argentina	2,790	0.885	25	72	50	--	--
Uruguay	2,840	0.883	21	74	15	--	16
Brazil	2,940	0.796	58	66	56	6	29
Mexico	3,030	0.845	36	70	110	6	22

Sources: World Bank (1993): Tables 1, 28, A.3, A.6 and A.7; World Bank (1994): Tables A-1 and A-8; UNDP (1996): Table 1

Figure 1: Financing flows within the South African health care system as at 1994





### 1.3 Public/private interactions within the health system

Figure 1 outlines the financing flows to different population groups within the country, and indicates the segmentation of the health sector inherited from the apartheid era. Private providers and private insurers play important roles within the sector, but still predominantly serve the white, higher income groups, leaving the public sector to serve the lower income, largely African population. A limited section of the population pay out-of-pocket for private sector services, but this tends to be restricted largely to primary care services (e.g. general practitioners and over-the-counter medicines). However, prior to the 1998 Medical Schemes Amendment Act there was a clear distinction between 'medical aid schemes' and 'commercial health insurance'. The majority of those using private sector services are covered by health insurance in the form of 'medical schemes', most of which are mutual societies governed by the Medical Schemes Act of 1969 (Soderlund *et al.* 1998). These are for the most part employer-based with joint contributions by employers and employees, and provide comprehensive cover primarily in the private sector for employees and their dependants. Providers are reimbursed primarily on a fee-for-service basis. Employers receive a full tax subsidy for their contribution. By law most medical schemes are non-profit organisations each governed by a board representing its members. All schemes employ professional administrators to handle reimbursement and premium collection. Although some administrators are employed in-house, most are administered by for-profit companies that are contracted to provide the service. Medical schemes, through risk pooling, should enjoy a strong element of cross-subsidy from the healthy to the unhealthy and the high income to middle-income groups (van den Heever 1997). Over the 1990s there was also a growing commercial health insurance sector, providing both comprehensive cover and/or hospital coverage. A fundamental difference between medical schemes and commercial health insurance is that health insurance was based on risk-rating leading to cream-skimming and exclusion of the elderly and unhealthy. The Medical Schemes Amendment Act of 1998 has, subsequently, attempted to draw both forms of insurance under the same regulatory framework (see section 2.2).

Table 2 spells out further some of the main elements of the public-private mix in health care, as inherited from the apartheid era. The table uses the standard analytical framework applied in health economics' discussions of the nature and form of the 'public private mix' within any health system. It emphasises that by 1994 the public sector had already established a range of interactions with the private sector. Indeed, in 1995 the value of government contracts with private organisations for the provision of hospital level clinical and non-clinical care was estimated to be 9.4% of the total public hospital budget (Monitor Company *et al.* 1996). South Africa also has formalised and long-standing arrangements with individual private providers (doctors and nurses) under which periods of their time are purchased during which they work within public facilities ('session doctors').

Table 2		
Financing	Provision	
	<i>Public</i>	<i>Private</i>
<b>Public</b>	<ul style="list-style-type: none"> <li>• Tax-funded provision of primary care and hospital care</li> </ul>	<ul style="list-style-type: none"> <li>• Public sector contracts with doctors to provide primary care to low income patients and to provide sessions within hospitals</li> <li>• Public sector contracts with private nurses to provide care in public hospitals</li> <li>• Public sector contracts with private for profit companies to provide clinical (particularly acute and psychiatric) hospital care</li> <li>• Public sector contracts with not-for-profit hospitals to provide acute (state-aided hospitals) and chronic (e.g. TB) care (SANTA)</li> <li>• Public sector contracts with private companies to provide as range of non-clinical services e.g. cleaning, laundry, security services etc</li> </ul>
<b>Private</b>	<ul style="list-style-type: none"> <li>• User fees charged at public hospitals – and revenue generated returns to national tax pool for distribution across sectors</li> <li>• Some insured patients use public hospital services, particularly when there is no nearby private alternative or for specialist care (such as transplants)</li> </ul>	<ul style="list-style-type: none"> <li>• Private insurance and co-payments fund full packages of care (private GPs, private specialists, private hospitals and range of other health care providers)</li> <li>• Some cash payment for private GPs, in particular, but also at hospital level</li> </ul>

Table 2 does, however, hide some important aspects of the current interactions between the sectors. In the private financing-public provision cell, for example, are a range of interactions that have the potential to generate **subsidy from the private to the public sector**. In these arrangements private financing funds access government-owned services for private patients. They include: out-of-pocket payments and medical scheme reimbursements for private patients treated in public facilities, and leasing out public beds and wards to private providers for the care of their patients (Doherty *et al.* 2002). It is also, at least theoretically, possible that such arrangements may allow some degree of cross-subsidy between high and low income patients, if the revenue they generate is retained within the public health system and used to support the provision of public services to public sector beneficiaries who are of lower income than private sector users.

In practice, moreover, the potential revenue generating capacity of these arrangements for the public sector is limited by the fact that the charges levied for medical scheme members who use public sector hospitals are generally below cost-recovery levels (McIntyre and Gilson 2000; 2002). In effect, therefore, these arrangements generate **subsidy from the public to the private sector**.

Three other important types of subsidy from public to private sectors were also inherited from the apartheid era:

1. Government resources are used to subsidise private sector care. The medical scheme contributions of private companies are fully tax deductible representing, according to one study, a subsidy of between R1.5 and R2.6 billion in 1994 (Price *et al.* 1994). This was equivalent to between 10% and 17% of the 1994/95 health budget (McIntyre 1997). The greatest beneficiaries of this subsidy are high-income earners who belong to the most expensive medical aid schemes and have the highest marginal tax rates (Price *et al.* 1994).
2. General tax revenue filters into medical schemes via employer (government) contributions to medical schemes on behalf of civil servants (which amounted to nearly R1.8 billion, or about 16% of the government health budget, in 1992/93) (McIntyre 1997). Civil servants and their dependants account for 25% of all medical scheme members. It could be argued that these contributions should be considered to be part of the normal cost of employment, to ensure similar fringe benefits to those provided by private employers. However, the private sector has faced an uncontrolled cost spiral over the past two decades that has led to massive increases in contribution levels. Whereas medical scheme contributions accounted for about 7% of average formal sector salaries in 1982, this had increased to 15% in 1992 (McIntyre *et al.* 1995). This has resulted in increases in general tax funding of medical scheme contributions for civil servants that are disproportionate compared to the marginal real increases in the government health budget.
3. Government heavily subsidises health worker training and the majority of the most highly skilled health workers leave to work in the private sector shortly after completing their training.

## 2. POLICY INITIATIVES SINCE 1994

### 2.1 Broad policy and structural framework

A new politico-administrative structure was established after the 1994 elections, with the creation of nine new provinces instead of the previous structure of four provinces and ten 'homeland' administrations. These nine provinces each have a legislature with significant, delegated powers. They are responsible for all major social service delivery functions, but, at present, have extremely limited decentralised revenue generating authority.

Since 1994 there has also been significant restructuring within the health sector. The national Department of Health is now largely responsible for policy making and co-ordination functions, while the provincial health departments are responsible for the vast majority of health service provision. In addition, local governments have a constitutional responsibility for the provision of 'municipal' health services (a contested term, variously defined as including environmental health services only, or also primary care facilities or also the district hospital). There is a commitment to establishing a district health system that will integrate the primary care services currently provided by provincial administrations and local governments. However, the major obstacle to establishing health districts has been lack of clarity about their governance structure – specifically, whether the district health system will be rooted in deconcentration of authority to provincial health departments or devolution to local governments. Recent legislation suggests that local governments will become the dominant structure at health district level in the future, but in the interim provincial health departments are likely to continue to play the dominant role in primary care provision in most provinces.

The first democratic government of the country, elected in 1994, explicitly committed itself to redress inequality in South Africa. For example, the Reconstruction and Development Programme (RDP) stated that "*attacking poverty and deprivation must be the first priority of a democratic government*" (African National Congress 1994: 4). This commitment was supported by the 1996 Constitution and associated Bill of Rights. Although equity has remained a key policy goal across sectors since 1994, the approach to its achievement has been heavily shaped by the 1996 Growth, Employment and Redistribution (GEAR) macro-economic strategy. GEAR overtook the RDP as the government's pre-eminent policy framework and places greater emphasis on economic growth as a strategy for redistribution than the RDP. Much subsequent policy development in the social sectors, including health, has been strongly shaped by GEAR (Gilson *et al.* 1999; Gilson and McIntyre 2002). GEAR is comprised of three main objectives: promoting private (especially foreign) investment; encouraging export-led growth; and improving productivity. These objectives are to be achieved by: reducing the deficit to improve business confidence and private investment; increasing government spending at a rate slower than overall economic growth; and tight monetary controls and the removal of import tariffs and exchange controls to encourage private (notably foreign) investment. The emphasis on private investment and export promotion has constrained job creation and raising income levels for the poor (Gilson *et al.* 1999). The macro-economic environment is one that encourages private investment creating the space for greater private sector engagement in the health system.

### 2.2 Private sector initiatives in the health sector 1994-1999

Various policies have been developed which have an impact on the private health sector. Some of them are aimed at regulating its growth (such as a moratorium on

the building of private hospitals) whilst others are aimed at controlling some of the worst excesses of private medical care (such as banning private practitioners from dispensing, a practice which had contributed to poly-pharmacy and excessive medication). The 1998 Medical Schemes Act is intended to prevent some of the practices of the private pre-payment medical scheme industry which undermine equity whilst also strengthening management and governance within the industry. For example, it seeks to:

- improve cross-subsidy within the insured pool (by banning practices such as risk-rating);
- limit the burden placed by privately insured patients on the public sector (by requiring insurers to cover a package of prescribed minimum benefits whether provided in the private or public sectors, so preventing the dumping of insured patients whose benefits are exhausted on the public sector);
- strengthen individual insurance schemes (by requiring them to maintain strong financial bases).

The impacts of the Act remain to be seen but it may tackle some of the problems of the sector.

However, the key challenge to the South African health system remains how to maintain the current overall level of health sector financing whilst extending redistribution within the system. Current policy frameworks often do not address this challenge. Private sector oriented policies have, therefore, neither been co-ordinated or contextualised within an explicit and strategic approach to either the private sector or the health system as a whole (McIntyre and Gilson 2000; 2002).

In addition, where proposals have been made that begin to address this challenge, they have not been implemented. For example, the proposals of the 1995 Committee of Inquiry into a National Health Insurance System included steps to increase the accessibility of private primary care services to a broader section of the population, and for a form of social health insurance (SHI) (South Africa 1995). The SHI proposals were particularly intended to encourage a growth in low cost health insurance coverage among low-income groups – and, given the existing cost structures of private hospitals this SHI, would likely support use of public hospitals. The proposals also recommended mechanisms for two new forms of subsidy favouring lower income earners. First, a risk equalisation mechanism would ensure that, if the state plan comprised mainly low-income workers while high-income earners remained within medical schemes, there would still be high- to low-income earner cross-subsidisation. This would occur as all the income related contributions would be pooled and individual schemes and the state plan would receive equal risk-adjusted capitation payments from this pool for the mandatory component of the package. Second, there would be a subsidy from the private sector (through SHI employer and employee contributions) to the public sector (through payment of full-cost user fees when SHI members use public hospital services).

These proposals were, however, over-turned by subsequent proposals that removed the idea of a risk equalisation fund and so also removed the potential for cross-subsidisation between high- and low-income earners within the SHI structure (Gilson *et al.* 1999). New policy directions are currently under discussion.

### 3. CHANGES IN PATTERNS OF SPENDING WITHIN THE HEALTH SECTOR SINCE 1994

The recent National Health Accounts analysis for 1996/97-1998/99 (Doherty *et al.* 2002) provides the first comprehensive picture, from a financing and resource perspective, of how spending patterns in the sector as a whole have changed since 1994. Its key findings include:

#### a) Overall expenditure levels and patterns

- there has been a growth in the proportion of Gross Domestic Product devoted to health care: to 8.8% in 1998/99 (accompanied by no improvement in health status indicators – instead, indeed, given the HIV/AIDS pandemic, health status indicators are worsening);
- as a result of the government's macro-economic policy, worse than expected economic performance and inefficiencies in public sector spending, government financing of health care stagnated after 1997 with government spending per person dependent on the public sector falling by 2.5% between 1997/98 and 1998/99;
- by 1998/99 households and employers had begun to shoulder greater burdens of health care financing compared to 1997/98 with increases of 4.5% and 3.4%, in the proportion of total health care resources that they contributed;
- in 1998/99 59% of available resources continued to be controlled by private financial intermediaries which serve less than one-fifth of the population, indicating the continued mal-distribution of resources between sectors relative to the population they serve;
- the cost-recovery rate in public facilities is low and decreasing, falling from around 9.2% of public hospital recurrent expenditure in 1992/93 to 2.1% in 1998/99. This is most likely due to a combination of falling use by paying patients and poor management of billing systems.

#### b) Private sector patterns:

- over the period of review, government spent twelve times as much per year on subsidising a civil servant to purchase medical aid as it did on funding public provision of care per person dependent on the public sector;
- the annual real growth in expenditure per medical scheme beneficiary was 10% between 1996/97 and 1998/99, compared with 1% for public sector spending on public sector beneficiaries;
- cost escalation in the private sector was driven by private hospitals (including drug costs), with an average annual growth in spending of 19% between 1996/97 and 1998/99, with rising drug costs (dispensed outside hospitals) towards the end of the period as a second factor;
- the private sector probably has higher administrative costs than the public sector (the latter is around 8% of total spending) and there were relatively high increases in the administration not associated with managed care, that suggest increased profit-making by the administrators of medical schemes;
- the proportion of the population covered by medical aid fell slightly from 1992/93 to 1998/99 suggesting that the public sector is serving a slightly increasing share of the population;

- the number of private hospital beds doubled between 1989 and 1998, with an annual growth rate of 9% across the period (and despite a moratorium on the development of new beds imposed in 1994);
- 53-73% of GPs work in the private sector, 75-77% of specialists and around 40% or so of nurses.

#### **4. HEALTH CARE UTILIZATION PATTERNS 1995-99**

Various analyses of household survey data, finally, provide a household perspective on the public-private mix.

##### **4.1 Data sources and limitations**

The analyses explore utilisation patterns on the basis of the “October Household Survey” (OHS), a national household survey that was conducted annually between 1993 and 1999 by Statistics South Africa (StatsSA). The analysis concentrates on the OHS 1995 (with 1996 Census weights applied) and the weighted OHS 1999 datasets.

The survey data contain information on demographics, the use of health services, morbidity, environmental characteristics and socio-economic status. Although it would be interesting to conduct an analysis that can explain the determinants of ‘choice of health care’, the available data from these surveys essentially allow an investigation of the characteristics of individuals that use different types of health care facilities.

The OHS95 only provides data on: age, gender, income level, type of dwelling area, medical aid status, population group, province, educational level of individuals, position in household, and of course data on the type of health service that those who were sick consulted. Unfortunately, the OHS99 dataset is more restricted. Moreover, both data set only allow consideration of the type of health care facility consulted by ownership (public/private), rather than also and by level (clinic/hospital). Use of traditional/spiritual healer can also be considered. However, the OHS95 data does contain information on the type of health care facility that household members would use if they were ill/injured, presenting another dimension for looking at health care utilisation patterns.

The sample size of the datasets are 130,787 individuals in 1995 and 106,650 in 1999. Approximately 10% of individuals had suffered from one type of illness or injury or the other during the one-month recall period in both years. The samples were weighted to give a more accurate representation of the South African population (as estimated by the 1996 census).

In the following sections, only significant results are presented.

##### **4.2 Utilisation patterns 1995**

In 1995 a total of 60.1% of respondents had used public sector services, 36.3% private sector services, and 3.6%, spiritual/traditional healers, for an illness episode in the last month (Table 3). The majority of both African and Coloured respondents used public services, whilst most Indian and, in particular, White respondents used private services. Africans were the most likely to use traditional/spiritual healers.



**Table 3: Utilisation pattern by population groups, 1995<sup>4</sup>**

Population group	Public %	Private %	Traditional/ spiritual healer %
African	67.7	27.5	4.8
Coloured	62.7	36.7	0.7
Indian	42.2	54.9	2.7
White	30.8	68.4	0.7
Total	60.1	36.3	3.6

There was also a greater tendency to use private facilities within the wealthier groups (quintile 5) than the poorer groups (quintile 1) (Table 4). However, utilisation of public facilities, and the decision *not* to seek health care from any health care institution, was greater among the poorer groups. Overall, the proportion of people who went to traditional healers for treatment of illness was stable across the lower four income quintiles; lower utilisation by the highest quintile is likely to be explained by its composition of predominantly white households.

**Table 4: Utilisation patterns by income quintiles, 1995**

Income quintile	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
1	57.4	15.4	3.2	24.0
2	54.5	22.3	3.2	20.0
3	54.0	25.3	3.5	17.2
4	46.9	31.5	3.2	18.4
5	32.5	49.0	1.9	16.6
TOTAL	48.6	29.3	3.0	19.2

Note: the values for sample average have been reduced to one decimal place. Also, proportions are by rows (income quintiles). So, it would be right to say that 57.4% of those in the lowest income quintile used the public sector when they were ill/injured.

It is also instructive to view health services utilisation by dwelling area, as outlined in Table 5.

<sup>4</sup> Table 3 contains the percentages of people who actually used health services when they were ill.

**Table 5: Utilisation by dwelling area, 1995**

Dwelling area	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
Urban – formal	41.6	40.2	1.8	16.4
Urban -informal	59.0	16.3	6.1	18.7
Semi-urban formal	45.0	33.3	0.0	21.7
Semi-urban informal	56.2	21.4	5.9	16.6
Rural – formal	55.5	16.7	4.0	23.8
Rural - informal	76.3	6.8	8.3	8.5
<b>Total</b>	<b>48.6</b>	<b>29.3</b>	<b>3.0</b>	<b>19.2</b>

One common trend in this table for urban, semi-urban and rural dwellings is that the proportions of respondents who use private facilities were higher for those living in formal dwellings than for those living in informal dwellings. The reverse is the case for the use of public facilities. This suggests that utilisation of health services may not only be influenced by income levels/costs, but also by availability of the services. It is interesting to note that the proportion of those using private health care facilities was higher among semi-urban informal households (21.4 %) than among urban informal households (16.3 %). This may also relate to physical access as semi-urban areas refer to small towns while urban areas are generally vast cities. Also, the rural (informal) dwellers had by far the lowest proportion for 'not seeking health care' (8.5 %). Enlisting the help of a traditional healer is much more common in informal than in formal settlements, and their use does not decline dramatically from rural to urban areas.

Cross-tabulations for provinces do not show significant differences between the provinces and are therefore not included in the presentation.

Finally, it is possible to examine in more detail utilisation patterns by population group and income quintile. The cross-tabulations of income quintiles presented in Table 6 try to draw out the 'income-effect' from any other effect brought about by the differences in population group by establishing income quintiles for each population group rather than for the sample as whole. This means that there is an equal distribution of the respective population groups in each income quintile. However, the average income in particular quintiles differs across population groups (e.g. the average income for Africans in quintile 5 is lower than that for whites in quintile 5).

**Table 6: Utilisation by income quintiles within population groups, 1995 (in %)**

AFRICAN				
Income Quintiles	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
1	57.5	14.1	3.6	25.0
2	55.7	19.4	3.3	21.6
3	54.9	23.1	4.5	17.6
4	53.2	22.0	4.2	20.6
5	48.1	29.7	3.5	18.9
<b>Total</b>	<b>53.7</b>	<b>21.8</b>	<b>3.8</b>	<b>20.7</b>
COLOURED				
Income Quintiles	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
1	64.5	16.3	0.9	18.3
2	52.0	22.7	0.0	25.3
3	53.0	22.0	0.4	24.6
4	52.5	32.9	1.1	13.5
5	31.7	49.3	0.5	18.5
<b>Total</b>	<b>50.1</b>	<b>29.3</b>	<b>0.6</b>	<b>20.1</b>
INDIAN				
Income Quintiles	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
1	56.9	33.9	0.6	8.6
2	33.3	39.9	4.2	22.6
3	26.1	61.8	0.9	11.2
4	28.1	59.4	7.1	5.4
5	25.1	65.7	0.9	8.3
<b>Total</b>	<b>37.4</b>	<b>48.7</b>	<b>2.4</b>	<b>11.4</b>
WHITE				
Income Quintiles	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
1	34.7	56.6	0.3	8.3
2	32.1	53.7	1.2	13.0
3	23.0	54.9	0.2	21.9
4	23.3	62.2	0.5	14.1
5	17.5	69.7	1.0	11.8
<b>Total</b>	<b>26.7</b>	<b>59.3</b>	<b>0.6</b>	<b>13.34</b>

These data show a clear distinction between the African and coloured population on the one hand, and the White and Indian population on the other. In both the African and Coloured groups more than half of the people use public services. Yet among the African population almost half (48.1%) of the highest income quintile used public facilities, unlike the highest income people among other population groups. This could be because the income level of the highest income quintile for the African population is not as high as that of the other population groups. However, Table 7 shows that even with income quintiles as specified in the first 'income-utilisation' table (income quintiles created with the total sample), the utilisation of public facilities

by the African population in the highest income quintile is still relatively high compared to the other population groups. Using the same criteria, the proportions of the highest income quintile for the other population groups that used public facilities are: Coloured – 30.7%; Indian – 26.7%; White - 22.2%. It appears that the African population generally tend to use public facilities more than any other type, even when they are more than able to afford health services from the private facility.

It is also interesting to note that the decision not to seek health care is not strongly correlated to income. In all race groups, the respective figures do not steadily fall as incomes rise, as might be expected.

**Table 7: Utilisation by income quintiles (based on the total sample) for the African population, 1995 (in %)**

AFRICAN				
Income Quintiles (Generated from total sample)	Public %	Private %	Traditional/ spiritual healer %	Did not seek health care %
1	57.8	13.9	3.4	25.0
2	54.5	21.4	3.8	20.3
3	56.1	21.7	4.4	17.9
4	51.5	24.3	4.1	20.1
5	44.5	33.1	3.1	19.3
<b>Total</b>	<b>53.7</b>	<b>21.8</b>	<b>3.8</b>	<b>20.7</b>

#### 4.3. "Prospective" Health Services Utilisation

This section uses data from the OHS 1995 survey in which respondents were asked where they would seek health care if a member of the household were sick. As each household had only one response, this information provides further insights on household utilisation preferences. As only the household head was asked this question, the data presented here are drawn from the sub-sample containing only household heads.

The questionnaire was framed to discourage respondents from choosing the option of not seeking health care, so there are only three options in this section of the analysis. A lower proportion of the sample chose the option of traditional/spiritual healer, as compared to the earlier data. Table 8 looks at the total averages across both sets of data.

**Table 8: Utilisation - practice vs. plans, 1995 (in %)**

Health Care Facility	Proportion of those who sought health care when ill/injured	Proportions of those who would seek care if household member were ill/injured
<b>Public</b>	48.6 (60.1)	66.7
<b>Private</b>	29.3 (36.3)	33.1
<b>Spiritual/Traditional Healer</b>	3.0 (3.7)	0.2
<b>Did not seek health care</b>	19.2	NA

The figures in parenthesis are the proportions adjusted to exclude the "not-seeking" option since this was not an alternative in the questionnaire item on planned health services utilisation. The data suggest that the use of traditional healers cannot be

predicted for future illnesses but is considered only once the illness occurs, given the large gap between actual use of a traditional healer (3.7%) and predicted use (0.2%).

Utilisation by age groups is similar to the overall average. However, utilisation by gender shows some interesting results (Table 9).

**Table 9: Predicted utilisation by gender, 1995 (in %)**

Gender of household head	Public	Private	Spiritual/Traditional Healer
Male	62.0	37.8	0.2
Female	78.0	21.7	0.3
<b>Total</b>	<b>67.0</b>	<b>32.9</b>	<b>0.2</b>

The respondents to the question are household heads, so the category 'female' automatically refers to female household heads. The results as shown in the table imply that individuals from households with a female head will be more likely to use the public facility, than the members of male-headed households. A possible explanation is that households that are headed by females are likely to be more deprived socio-economically than male-headed households.

Cross-tabulations of the prospective data according to population group are similar to previous results (Table 10), strengthening the suggestion that the African population prefer to use public facilities.

**Table 10: Predicted utilisation by population group, 1995 (in %)**

Population Group	Public	Private	Spiritual/Traditional Healer
African	80.8	18.9	0.3
Coloured	61.2	38.7	0.0004
Indian	38.3	61.6	0.2
White	20.8	79.1	0.0005
<b>Total</b>	<b>67.0</b>	<b>32.9</b>	<b>0.2</b>

#### 4.4 Comparing 1995 and 1999 patterns

Table 11 shows that the majority of ill people tended to use public health services in both years, but that in the observed 4-year time span there was a significant shift towards the private sector. The utilisation of private sector health care facilities rose from over one third to nearly half. Although traditional healers have been used less according to the data, the small figure makes interpretation difficult.

**Table 11: Type of health care facility used by those who suffered from an illness or injury**

Type of Facility	Health care facility use as result of illness/injury (in %)	
	1995	1999
Public	60.1	51.5
Private	36.3	46.9
Spiritual/traditional healer	3.6	1.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

Neither age nor gender influenced the choice of health care facility significantly.

However, utilisation patterns across population group also changed considerably between 1995 and 1999 (Table 12). The African population demonstrated the highest inclination to use public health services in both years, whilst the majority of the white population, at the other end of the scale, used private services when ill. Yet across population groups, utilisation of public services decreased considerably. Among Africans, the relative decline amounted to 8 percentage points, whilst among the white population utilisation of public services fell by about 13.5 percentage points. Both among the coloured and the Indian population the drop was below 5 percentage points. The reported use of traditional or spiritual healers, which have mainly been frequented by the African population, has also fallen.

**Table 12: Utilisation pattern by population groups, 1995/1999<sup>5</sup>**

Population group		Public %	Private %	Traditional/ spiritual healer %
African	1995	67.7	27.5	4.8
	1999	59.7	38.1	2.3
Coloured	1995	62.7	36.7	0.7
	1999	58.2	41.8	0.1
Indian	1995	42.2	54.9	2.7
	1999	37.0	63.0	0
White	1995	30.8	68.4	0.7
	1999	17.3	82.4	0.3
Total	1995	60.1	36.3	3.6
	1999	51.5	46.9	1.6

An intertemporal comparison of utilisation of public and private health services between rural and urban areas for people who actually sought medical care is presented in Table 13. The table again shows the steep relative drop in public sector utilisation, particularly in rural areas (20 percentage points) compared to urban areas (approximately 11 percentage points).

**Table 13: Rural versus urban utilisation of health services, 1995/1999 (in %)**

Dwelling area		Public services	Private services
Rural	1995	83.3	16.7
	1999	63.3	36.7
Urban	1995	55.6	44.4
	1999	44.7	55.3
Total	1995	66.8	33.2
	1999	51.5	48.5

Unfortunately, the 1999 dataset does not contain income or expenditure data in an operational form that allow assessment of utilisation patterns by income quintile. However, the cross tabulations for utilisation and access to medical aid (Table 14) across years show that those with medical aid were more likely to use private facilities than those without access to medical aid. The reverse is the case for the use of public facilities. Seeking assistance from a traditional healer was more common among those without any medical aid.

<sup>5</sup> Table 3 contains the percentages of people who actually used health services when they were ill.

**Table 14: Utilisation by access to medical aid, 1995/1999 (in %)**

Access to medical aid		Public service	Private service	Traditional healer %
Yes	1995	33.8	65.0	1.2
	1999	13.3	86.4	0.3
No	1995	68.9	26.5	3.7
	1999	64.8	33.1	2.1
<b>Total</b>	<b>1995</b>	<b>60.1</b>	<b>36.3</b>	<b>3.6</b>
	<b>1999</b>	<b>51.6</b>	<b>46.8</b>	<b>1.6</b>

Table 15 also illustrates how utilisation patterns by medical scheme members changed over the second half of the 1990s. While in 1995 over a third of respondents with access to medical aid stated that they had sought assistance for their medical problem from a public service, this was only the case for 13 per cent of the respondents in 1999.

As the majority of people in South Africa, however, have no medical aid (about 75 per cent in 1999 according to the OHS), it is also critical to note that there was an increase of nearly 7 percentage points (to one third in 1999) in the proportion of this group using the private sector. The use of traditional healers dropped between 1995 and 1999, most notably among those without medical aid.

In 1995 more than 20 percent of respondents without access to medical aid stated they did not seek health care when they last were ill. The corresponding figure for respondents with medical aid lies at around 14 percent.

Table 16, finally, suggests that the level of education may influence the choice of health care. This influence is not necessarily direct: The level of education may have a bearing on income, place of residence and other socio-economic variables that affect the choice of health care. Because of the restrictive effect of age on educational levels, only observations from the age of 21 and above are used for the analysis (the group who would at least have had the opportunity (with respect to age) of acquiring tertiary education). Note that as a result of the restricted sample, total proportions have changed.

**Table 16: Utilisation by level of formal education, 1995/1999 (in %)**

Educational level		Public service	Private service	Traditional healer
No formal education	1995	69.4	23.5	7.2
	1999	68.5	28.9	2.6
Primary education	1995	70.5	25.5	4.0
	1999	64.8	32.9	2.3
Secondary education	1995	51.4	45.6	3.0
	1999	42.9	55.4	1.7
Tertiary education	1995	29.5	68.5	1.9
	1999	13.2	86.5	3.8
<b>Total</b>	<b>1995</b>	<b>57.7</b>	<b>38.6</b>	<b>3.8</b>
	<b>1999</b>	<b>49.8</b>	<b>48.4</b>	<b>1.9</b>

Among those over the age of twenty, utilisation of public and private services is roughly equal in 1999 as a result of a shift (of about 10 percentage points) towards the private sector over the preceding four years. As expected, those with higher levels of education are more likely to use the private sector. There is a clear

difference in utilisation patterns between people with primary and secondary education and those with no education and with only primary. There is a strong drop in the use of traditional healers by individuals with no formal education, nearly drawing even with those with primary education.

#### 4.5 Multivariate Analyses

This section, first, presents the results of a multinomial logit model that aims to explain the relationship between the factors used in the analysis and the choice of health care facility using data from the 1995 OHS (Annex 1). The data used pertain to the choice of health care facility when an individual was ill/injured within the recall period. Therefore, only a sub-sample of the total observations in the data set is used. The multinomial logit model is used for this analysis because there are four outcomes (4 choices with respect to seeking health care if an individual was sick), and these outcomes cannot be ordered.

The multinomial logit model works like a 'combination of logit models'. The coefficients of the variables are interpreted in relation to a comparison group. In this case, the comparison group is "1", the use of public facilities. The variables used are:

Age –	age in years <sup>6</sup>
Gender –	where 0 = female and 1 = male
Race –	population group, where race1 = African; race2 = coloured; race3 = Indian; race4 = white
Household income (hhinc) –	income levels measured as a continuous variable
Location –	where rural = 0 and urban = 1
Medical aid (medaid) –	where 0 = no medical aid; 1 = has medical aid
Level of education (edulev) –	where 0 = no formal education; 1 = primary; 2 = secondary; 3 = tertiary

The outcomes are:

- 0 = did not seek health care
- 1 = sought health care in a public facility
- 2 = sought health care in a private facility
- 3 = sought health care from a spiritual/traditional healer

Only variables with coefficients that are statistically significant<sup>7</sup> at least at the 10% level are presented. The outcome 'public facility' is the comparison group, and so all interpretation is relative to the use of a public facility. One outcome is presented at a time. The Indian population and 'no formal education' are the comparison groups for population groups and levels of education respectively; therefore all interpretations for these variables will also be made relative to the comparison groups.

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<sup>6</sup> We only use observations above the age of 20 because of the restrictive effect of age on the acquisition of formal education.

<sup>7</sup> If statistically significant at 5% level \*\*; if statistically significant only at the 10% level\*. The full model is at the end of this paper.



**Table 17: Outcome ‘did not seek health care’**

Variable name	Coefficient
Age	0.985 **
Race2	1.434 *
Race4	1.693 **
Hhinc	1.000 **
Edulev1	0.665 **
Edulev2	0.666 **

From the results, a unitary increase in age increases the chance of seeking health care from a public facility over not seeking health care at all. The coloured and white population are more likely not to seek health care than to seek health care in a public facility, as compared to the Indian population. Those with primary and secondary education are more likely to seek health care in a public facility than not to seek health care, as compared to those with no formal education.

**Table 18: Outcome ‘Private’**

Variable name	Coefficient
Gender	0.850 **
Race1	0.588 **
Race2	0.559 **
Hhinc	1.000 **
Location	1.555 **
Medaid	2.401 **
Edulev2	1.316 **
Edulev3	2.233 **

According to the second part of the multinomial logit output, males are more likely to seek health care in a public facility than to seek health care in a private facility. This is interesting, particularly given the earlier finding that male household heads are more likely to use private providers than female household heads (Table 9). The African and coloured population are more likely to seek health care in a public facility than to seek health care in a private facility, as compared to the Indian population. Those who live in urban areas are more likely to use private facilities compared to those who live in rural areas. Also, those with access to medical aid are more likely to use the private than the public facilities. Finally, those with secondary and tertiary education are more likely to use the private facility as compared to those without formal education.

**Table 19: Outcome ‘traditional/spiritual healer’**

Variable name	Coefficient
Age	0.987 **
Race2	0.165 **
Race4	0.266 **
Hhinc	1.000 **
Edulev1	0.522 **
Edulev2	0.579 **

Table 19 further indicates that increases in age increase the chances of using a public facility instead of a spiritual/traditional healer. The coloured and White population are more likely to use a public facility than use a spiritual/traditional healer as compared to the Indian population. Those with a maximum of primary or

secondary education are more likely to use a public facility than to use a spiritual/traditional healer as compared to those without any formal education. The value for the coefficient of 'tertiary' education suggests the same, but it is statistically insignificant.

It would have been interesting to do a multivariate analysis from a household perspective, as this would capture the influence of other members of the household on any given individual, but this is not possible with the available data.

Second, using data from the 1999 OHS we apply a logit model (Annex 2). The reasons are: Firstly, there is no data on 'non-utilisation of health services', and secondly, there are too few observations of individuals who used the traditional/spiritual healer. The logit model is a binary response model, so there are only two outcomes (0 for private facility; 1 for public facility). The coefficients of the logit model are presented as odds ratios. Odds ratios of above 1 favour the 'positive' outcome – 1 (public), while odds ratios of below 1 favour the 'negative' outcome – 0 (private). We only present the results of statistically significant variables. The complete model output can be seen in the appendix.

**Table 20: Results of 1999 logit model**

Variable name	Coefficient /Odds ratio
Age	1.004 *
Race1	1.682 **
Race2	2.199 **
Medaid	0.157 **
Edulev2	0.636 **
Edulev3	0.240 **

From the results, an increase in age increases the odds of using a public facility over the use of a private facility. The African population is more than one and a half times more likely to use a public facility instead of a private facility than the Indian population. The same goes for the coloured population, except that they are twice as likely to use the public instead of private than the Indian population. Those with medical aid are six times more likely to use a private facility (propensity is six times higher) than those without medical aid. Finally, those with a maximum of secondary education and those with tertiary education are more likely to use a private facility instead of public facility as compared to those who do not have any formal education. The results show that while those with secondary education are around one and a half times more likely to use a private facility instead of a public one (as compared to the group without formal education), those with tertiary education are more than 4 times more likely than the 'no formal education' group to use a private facility instead of a public facility.

#### 4.5 Summary of key findings from household analyses

Overall, therefore, these data provide two important insights into the South African health system, drawing on the perspective of the user of health care.

First, the health system clearly reflects and represents the broader fragmentation of society within South Africa. The health system is primarily split on racial grounds: the African population, and to a lesser extent the Coloured population, uses the public sector and the White population, and to a slightly lesser extent the Indian population, uses the private sector. This racial fragmentation, the legacy of apartheid, is however combined both with insurance status and income level (the uninsured poor use the public sector and the insured rich use the private sector), and with geography (the

rural population uses the public sector and the (formal) urban population the private sector).

Second, the data also indicate that between 1995 and 1999 all population groups have increased their use of the private sector. The greatest increases in use of the private sector were experienced by: the insured (a 21% increase); the rural population (a 20% increase); those with tertiary education (an 18% increase); the White population (a 14% increase); and the African population (an 11% increase). Although it is not possible to investigate the changing patterns of utilisation by income level, it seems clear that higher income groups, that is, those with insurance, have increasingly turned to the private sector over this period. It is, therefore, very likely that there is also a growing differentiation in utilisation patterns among the African population – with higher income people increasingly relying on the private sector and the lower/ lowest income African population relying on the public sector. There are certainly broader signs (for example, in analysis of income levels and in of health inequalities) of an emerging income-based fragmentation within society that is overlaying the apartheid inheritance of racial fragmentation.

Other factors that may explain the greater use of the private sector over time include:

- a growth in private provision: earlier data indicated that despite a moratorium on private hospital development, the number of beds has increased over time – and this may help explain the finding of increased use of the private sector in rural areas; before 1994 many public hospital in small rural towns served both the insured and the uninsured, but with the growth of private provision it is possible that the insured are being served by private facilities;
- a perceived or experienced decline in the quality of public facilities, and in particular, public hospitals – a subject of widespread popular debate that could support the growing use of existing or new private providers;
- a greater sense of entitlement among African and Coloured people, that they have the right and opportunity to use all available health services in the new political dispensation.

These analyses, finally, provide worrying indications of a reduced potential for cross-subsidisation within the health system as they point to a consolidation of the fragmentation within the system on insurance/income lines between public and private sectors.

## 5. CONCLUSIONS

This brief working paper provides background material for more detailed analysis of whether new forms of public-private interaction will strengthen the health system – in particular, by encouraging greater cross-subsidy between population groups.

It highlights three features of the South African health system of relevance to this analysis:

4. increased use of the private sector (all forms of provider) across population groups;
5. stagnation of government funding for publicly-provided health care, and the implications this has for quality of care and household utilisation preferences;
6. cost escalation in, growth of, and attraction of health personnel to, the private sector, and the implications this has for the sustainability of the overall health system, given household utilisation preferences.

It, therefore, suggests that the following questions are important in exploring the potential for bringing about greater cross-subsidisation within the South African health system through public-private interactions:

- Can the health system be a place of resistance to the broader forces of racial- and- income fragmentation within the country?
- Can the higher- income and insured population be attracted back to the public sector (by quality improvements and/or preferred provider arrangements), in order to allow greater cross-subsidisation *within* the public sector? And can such arrangements be implemented effectively?
- Can financing mechanisms be established that enable the privately insured users of private care to cross-subsidise the uninsured, served predominantly by the public sector?
- Can private, particularly primary care, providers, be encouraged to serve lower income groups at affordable prices (and, preferably, subsidised by the state) – making better use of the available pool of human resources for the population as a whole?
- Is regulation of the private sector (insurance and providers) being implemented effectively, as a foundation for other efforts to bring about greater cross-subsidisation?
- Can additional public funding flows be secured for the public health system and can cost escalation in the private sector be contained and efficiency improved, to the benefit of the overall health system?

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## ANNEX 1

### Multinomial logit model for health services utilisation, 1995

Survey multinomial logistic regression

pweight: newwght

Strata: <one>

PSU: <observations>

Number of obs = 8121

Number of strata = 1

Number of PSUs = 8121

Population size = 2326560.5

F( 33, 8088) = 27.29

Prob > F = 0.0000

utilise	RRR	Std.Err	t	P> t	[95%Conf.	Interval]
0						
age	.9846378	.0023885	-6.382	0.000	.9799668	.9893309
gender	1.047845	.077381	0.633	0.527	.9066259	1.21106
race1	1.321637	.2467812	1.493	0.135	.9165346	1.905792
race2	1.433807	.2807398	1.840	0.066	.9767878	2.104655
race4	1.692737	.3665754	2.431	0.015	1.107204	2.587922
hhinc	1.000002	8.65e-07	2.092	0.036	1	1.000004
location	.9772905	.0808747	-0.278	0.781	.8309461	1.149409
medaid	1.08803	.13195	0.696	0.487	.8578209	1.380019
edulev1	.6649161	.0682771	-3.974	0.000	.5436857	.8131782
edulev2	.665888	.0766267	-3.534	0.000	.5314165	.8343866
edulev3	.7826276	.147029	-1.305	0.192	.5415264	1.131073
2						
age	.998587	.0020662	-0.683	0.494	.994545	1.002646
gender	.8503847	.0542468	-2.541	0.011	.750427	.9636569
race1	.5875558	.0719944	-4.340	0.000	.4620981	.7470747
race2	.5589294	.0745601	-4.361	0.000	.4303199	.7259763
race4	.9985976	.1406299	-0.010	0.992	.7577051	1.316076
hhinc	1.000003	8.47e-07	3.368	0.001	1.000001	1.000005
location	1.555043	.1135678	6.045	0.000	1.347622	1.794388
medaid	2.401408	.2065667	10.184	0.000	2.028783	2.842474
edulev1	.9533402	.0939683	-0.485	0.628	.7858409	1.156541
edulev2	1.316188	.1356374	2.666	0.008	1.075439	1.610831
edulev3	2.233052	.3325152	5.395	0.000	1.667749	2.98997
3						
age	.9868189	.0051568	-2.539	0.011	.9767619	.9969795
gender	.8396445	.1329293	-1.104	0.270	.6156253	1.145182
race1	1.642627	.6421483	1.270	0.204	.7633634	3.534653
race2	.1675	.0877546	-3.410	0.001	.0599787	.4677702
race4	.2655554	.1639239	-2.148	0.032	.0791847	.8905719
hhinc	1.000003	1.02e-06	3.235	0.001	1.000001	1.000005
location	.8154482	.1288826	-1.291	0.197	.5981951	1.111604
medaid	.713938	.2058094	-1.169	0.242	.4057374	1.25625
edulev1	.5217124	.0924739	-3.671	0.000	.3685807	.7384648
edulev2	.5790604	.1129419	-2.801	0.005	.3950735	.8487307
edulev3	.7032048	.2564054	-0.966	0.334	.344086	1.437132

(Outcome utilise==1 is the comparison group)

## ANNEX 2

### *Logit model for health services utilisation, 1999*

Survey logistic regression

pweight: wgt4

Strata: <one>

PSU: <observations>

Number of obs = 7838

Number of strata = 1

Number of PSUs = 7838

Population size = 3.080e+10

F( 10, 7828) = 89.23

Prob > F = 0.0000

privpub	Odds Ratio	Std. Err.	t	P> t	[95% Conf. Interval]
age	1.003859	.0020231	1.911	0.056	.9999009 1.007833
gender	.9435175	.056535	-0.970	0.332	.8389548 1.061112
race1	1.681859	.24972	3.502	0.000	1.257144 2.250061
race2	2.199379	.3562371	4.866	0.000	1.601063 3.021286
race4	.9055428	.1605338	-0.560	0.576	.6397134 1.281836
location	1.061124	.0678341	0.928	0.353	.9361449 1.202787
medaid	.1570675	.0140531	-20.689	0.000	.1318002 .1871787
edulev1	.9261684	.0807604	-0.880	0.379	.7806477 1.098816
edulev2	.6361	.05906	-4.873	0.000	.5302511 .7630784
edulev3	.2398171	.0374642	-9.140	0.000	.1765569 .3257432